

REMARKS
Status of the Application

In the office action dated June 20, 2005, Claims 1-9 were rejected. Claims 1 and 9 have been amended and Claims 7-8 have been canceled. Claims 2-6 are original claims.

Applicants' Invention

Applicants have amended the claims to more clearly point out their invention which is directed to a process for applying a primer layer onto fiber reinforced plastic automotive substrates and curing the primer layer with high energy radiation and moisture and subsequently applying a top coating which may be a single or multiple layer top coating to this primer layer. The purpose of this primer layer and its dual stage curing is to effectively suppress the occurrence of popping or blistering defects in the subsequently applied layer or layers of a top coating when the top coating is thermally cured. The unique polyurethane binder of the primer consists of free radically polymerizable olefinic double bonds in combination alkoxy silane groups. The binder is cured by high energy radiation which polymerizes the olefinic double bonds and moisture cures the alkoxy silane groups by the formation of silane bridges. Moisture curing of the silane groups provides adequate crosslinking to the primer coating in areas that may be shaded from the high energy radiation.

None of the references cited in the rejection mention this problem of popping and blistering of top coat layer(s) applied onto fiber reinforced plastic automotive substrates during its/their thermal curing or how this problem can be solved. The closest any of the cited references come to Applicants' novel process is Mizutani et al. U.S. 5,780,530 who make reference to coating compositions for "vehicles including motor cars" but never mentions the problem of popping and blistering of a top coating applied on automotive fiber reinforced plastic substrates and thermally cured and how such a problem can be solved. Mizutani is merely directed to the use of a wide variety of thermosetting resin compositions to coat a

variety of substrates but does not suggest Applicants' invention as set forth in the amended claims.

Claim Rejections - 35 USC § 103

Claims 1-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. U.S. 5,780,530 in view of Warren et al. U.S. 6,265,514 and Inoue U.S. 5,378,734. None of these references alone or in any combination show or suggest applicants' invention as set forth in the amended claims.

As pointed out above, Mizutani does not recognize the problem of blistering and popping of the top coat layer applied over a fiber reinforced plastic automotive substrate on subsequent curing of the top coating with thermal energy. This is a problem unique to fiber reinforced plastic automotive substrates which require a primer layer and a top coat layer which may be a single or a multiple topcoat layer.

In the rejection, the Examiner pointed out that Mizutani, on Col. 14, line 38, plastic composites, such as, FRP (fiber reinforced plastics) were disclosed as substrates that could be coated. However, this is only one of the many substrates disclosed and Mizutani's examples only show the use of zinc phosphate treated galvanized steel sheets (see Mizutani, col. 17, line 13). This teaching of Mizutani is not meaningful since Mizutani never recognizes the problem that Applicants have solved, i.e., the blistering and popping of a top coat layer applied over fiber reinforced plastic substrates on subsequent curing of the top coat. There is no mention of the application of a subsequent top coating by Mizutani or the possibility that subsequent curing of such a top coating could cause blistering and popping problems.

Applicants have directed the claims to the use of primers wherein the binder is a polyurethane. Mizutani uses an external curing agent in his composition such as a blocked polyisocyanates or aminoplast resins (see Mizutani, col. 2, lines 50-52) but not a polyurethane as do Applicants. Further, Mizutani shows the use of a silicone polyol resin that optionally

contains C=C double bonds in the chain. The polyurethane binder used in Applicants' process requires the presence of C=C double bonds. This is a key curing component of Applicants' invention. The Examiner then admits "Mizutani et al fail to teach that curing of the primer layer was carried out by free-radical polymerization of the C=C double bonds on irradiation with high energy radiation (Claim 1) such as UV (Claim 6)." The high energy curing of the C=C double bonds is a necessary step in Applicants' process for curing the primer layer which is not recognized by Mizutani.

The Examiner pointed out that the formula in col. 5 of Mizutani allows for the assumption that the silicone polyol resin may contain alkoxy silane groups, However, component c) taught by Mizutani, namely, the hydrolyzate /polycondensate comprises the SiOR or SiOH groups whereas Applicants do not have a separate polymeric component that contains these groups. Applicants' process as set forth in the amended claims is simply not taught or suggested by Mizutani or in combination with Warren and Inoue.

In regard to Warren et al, this reference is directed to elastomers not coating compositions and certainly not Applicants' process for applying and subsequent curing a primer coating composition that is then top coated and cured without blistering and popping of the resulting finish. Curing of elastomers with UV rays or heat is not remotely related to Applicants process for coating automotive fiber reinforced plastic substrates. Elastomers are not coatings and there would be no reason for one skilled in the coatings art to look to the field of elastomers to solve a blistering and popping problems of the top coating which is the particular advantage of Applicants' invention.

Inoue is alleged to teach UV and moisture curing of organopolysiloxane compositions but these compositions are not used as primer coatings as is required in Applicants invention as set forth in the amended claims but Inoue teaches that his compositions are useful as sealing agents, and coating agents in the building and construction industries and as adhesives, sealants and potting agents for electric and

electronic parts (see, Inoue, col. 8, lines 45-49). There is no suggestion or teaching of Applicants' process as set forth in the amended claims that utilizes a primer coating composition that consists of a polyurethane binder that contains C=C double bonds and hydrolysable alkoxy silane groups where the binder is cured by high energy and moisture prior to application of a top coating that results in coated automotive reinforced plastic substrates wherein there is no blistering or popping of the final top coating. Such problems are simply not recognized by Inoue and hence, Applicants novel process which solves these problems can not be obvious in view of Inoue in combination with Mizutani and Warren. The obviousness rejection based on these references can not stand in view of the amended claims and should be withdrawn and the amended claims allowed.

Claim 5 was rejected over Mizutani since Mizutani teaches that coating compositions can be electrically conductive by the addition of carbon black, iron oxide and other electrically conductive pigments. Mizutani does not teach or suggest that the composition can be used as a primer layer or that a top coating can be applied thereto or the blistering problem on curing the top coating. The mere mention of electrically conductive pigments by Mizutani does not render claim 5 obvious since claim 5 is dependent on claim 1 which is clearly not taught or suggested by Mizutani.

Claim 7 has been canceled thereby obviating any rejection of that claim.

Claims 1-3, 6-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Gaglani U.S. 5,312,943 in view of Masreliez et al U.S. 6,011,389. These references do not show or suggest Applicants' invention as set forth in the amended claims.

Gaglani does not mention Applicants' process as set forth in the amended claims of applying a primer, curing the primer and applying a top coating and curing the top coating without popping or blistering thereof. The Examiner states that Gaglani mentions coating circuit boards which could be considered automotive parts. Applicants have amended the

claims to clearly show that circuit boards are not included as automotive parts and have listed in a Markush group the automotive parts that are coated according to Applicants' process which excludes printed circuit boards. Appearance of circuit boards generally is not a problem as is with the exterior or interior finishes on an automobile or truck.

In regard to Masreliez, that reference is also directed to coating circuit boards. Neither reference is directed to the invention set forth in the amended claims which is directed to applying a primer to fiber reinforced automotive substrates which exclude circuit boards, curing the primer and applying a top coating and curing the top coating. The popping and blister problems that Applicants have solved by utilizing their process are not mentioned by either reference nor are the references directed to applying top coating over the primer layer since there is no need to top coat a circuit board. The rejection base on Masreliez and Gaglani can not stand and should be withdrawn.


Claim 4 was rejected under 35 U.S.C. 103(a) as being unpatentable over Gaglani U.S. 5,312,943 in view of Masreliez et al U.S. 6,011,389 in further view of Bergstrom et al U.S. 6,384,125. Bergstrom does make up for the aforementioned deficiencies of Gaglani and Masreliez. Bergstrom merely states that hydroxyl groups on a polyorganosiloxane can be used for moisture curing. Claim 4 is directly dependent on amended claim 1 and is directed to a polyurethane binder containing hydroxyl groups in combination with alkoxysilane groups that are used for moisture curing. There certainly is no mention by Bergstrom of Applicants' process as set forth in the amended claims that applies a primer coating to certain automotive plastic fiber reinforced substrates and cures the primer containing olefinic double bonds and hydrolysable alkoxy silanes and subsequently applies and cures a top coating without blistering an popping to the resulting finish. The rejection of Claim 4 based on Gaglani, Masreliez and Bergstrom should be withdrawn and the Claim allowed.

SUMMARY

In view of the foregoing amendments and remarks, Applicants submit that this application is in condition for allowance. In order to expedite disposition of this case, the Examiner is invited to contact Applicants' representative at the telephone number below to resolve any remaining issues. Please charge the fee due for the Petition of Extension of Time and any other fee due which is not accounted for to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

Respectfully submitted,

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